

step 3; locating all the blinking spots on the said die or the said wafer;

step 4; observing the temperature response of the blinking induced by the said pulsing input to the said blinking spots;

step 5; eliminating those blinkings that do not change as the ambient temperature rises below the phase transition temperature;

step 6; identifying those blinking spots that increased in blinking size as the ambient temperature rises; the said blinking spots recited in said step 6 are the hot spots.

#### ABSTRACT

This improvement is the process of using a few well collimated and even radiative heating lights to heat up the liquid crystal film, which is spread over the surface of the die of an integrated circuit. The radiative heating of the liquid crystal film from the top helps to form an even temperature profile on the liquid temperature film. The rapid time response of the heating filament temperature and the radiative heating process <sup>induces</sup> induce a rapid response in the liquid crystal film temperature. ~~The process of allowing the temperature of the liquid crystal temperature to rise and drop~~ the liquid crystal film temperature is brought to infinitesimally close below to the liquid crystal phase transition temperature, for a limited length of time. During this limited length of time, <sup>ins a 19</sup> a small ohmic heating dissipated from the die into the liquid crystal film would induce a localized phase transition in the liquid crystal film. Under a cross polarized light, the nematic liquid phase transition process exhibit ~~as~~ a change in the liquid crystal's

transparency and colors . The transition process is most easily visible when the die is periodically dissipating heat into the liquid crystal film at a 1.2 Hz and at 50% duty cycle. At this periodic heat dissipating mode, the periodic phase transition

induces a blinking appearance at the region where the phase

transition is taking place. This periodic ohmic heating is

accompanied with periodic voltage change in the die. The voltage

changes will induce a blinking appearance similar to the low

powered ohmic heating induced blinking. With the use of a

variation of the ambient temperature of the liquid crystal film

the size of the heat induced blinking increases as the

temperature increases. The size of the voltage induced blinking

does not respond to temperature changes, as long as the liquid

crystal's temperature is not crossing a phase transition

temperature. Thus, the varied heating light provide a means to

differentiate the two types of blinkings.